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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/069,940	03/01/2002	Tetsuya Higuchi	0020-4963P	5645
2292	7590	10/22/2003	EXAMINER	
BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747			WILSON, DONALD R	
			ART UNIT	PAPER NUMBER
			1713	

DATE MAILED: 10/22/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/069,940

Applicant(s)

HIGUCHI ET AL.

Examiner

Donald R Wilson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 September 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) 7,13 and 15 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6,10-12 and 14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5,6.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

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DETAILED ACTION***Response to Restriction Requirement***

1. Applicant's election with traverse of the inventions of Group I, Claims 1-6¹ and 10-14 in Paper No. 8 is acknowledged. The traversal is on the ground(s) that "--- all the claims of the present application share at least one "special technical feature", noting that all claims depend from Claim 1. This is not deemed to be persuasive because the Examiner has explained why the inventions of Claim 1 do not contain a special technical feature as defined in under PCT Rule 13.2. Applicant has not addressed the merits of this stated reason. The argument that the Examiner has failed to identify any "special technical feature in the Group I claims is interesting as the Examiner has said it doesn't contain one.
2. The requirement is still deemed proper and is therefore made FINAL. Claims 7-9 and 15 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention.

Response to Election of Species Requirement

3. Also acknowledged is applicant's election with traverse in the same Paper No. 8, of the species of:
 - a. a vinylidene fluoride (VF2)/hexafluoropropylene (HFP) copolymer as the fluorine containing elastomeric copolymer,
 - b. bisphenol AF as the vulcanizing agent, and
 - c. 8-benzyl-1,8-diazabicyclo-[5.4.0]-7-undecenium chloride (DBU-B) as the vulcanization accelerator.

The traversal is on the ground(s) that they do not have to limit the claims to a single species of a single type of copolymer, and that there is no serious burden on the Examiner for conducting a substantive search and examination for all of the species. This is not found persuasive because upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are

¹ It is acknowledged that the restriction requirement of 8/5/03 stated Group I as containing Claims 1-7 and 10-14, as opposed to Claims 1-6 and 10-14. However, this is believed to have been an obvious "typo" as the group was defined as a coagulation and drying step followed by a kneading step. Inspection of the claims shows that this is a characteristic feature of Claims 7, 8 and 9.

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written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141.

4. The requirement is still deemed proper and is therefore made FINAL. Claim 13 is withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected specie of the invention.

Claim Rejections - 35 USC § 102(b/e)/§ 103(a)

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. ***Claims 1-2, 4, 6, 10-11 and 14 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Effenberger.***

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9. Effenberger discloses compositions comprising as a preferred elastomers copolymers of monomers which include VF2 and HFP (col. 6, lines 41-48). A VF2/HFP copolymer is specifically taught as the fluoroelastomer (col. 8, lines 6-13). The compositions are also taught to contain curatives such as are known in the art among which bisphenols and quaternary onium salts are named (col. 6, lines 49-61). Example 29 exemplifies the use of bisphenol AF and a quaternary phosphonium salt as a curative making the combined use of a bisphenol and an onium salt readily envisaged. It is also taught that the method of making the composition comprises isolating the composition comprising a low shear coagulation method which may be a freeze drying or desiccation method (col. 7, lines 59). Thus, drying while kneading is taught. It is also taught at this cite that curatives may be added after isolation of the polymer from the aqueous dispersion. It is also taught that the curatives may be added to the aqueous blend prior to coagulation and drying (col. 8, lines 17-19). The latter process is said to involve simply drying and eliminating the water at temperatures near its boiling point (100°C) while maintaining a homogeneous mixture. In order to maintain a homogeneous mixture one of ordinary skill in the art would envisage, or it would have been obvious to continuously knead the mixture. As an objective of the invention is to prepare an extrudable composition, and the only type of extruder exemplified is a screw extruder (Example 24), kneading of the components in a molten state would have been expected to have occurred. In regards to the limitation that the vulcanizing agent and accelerator are mutually soluble, if such components are mutually soluble in the instant invention this is an inherent property which would also be true of the same components when used in the prior art.

10. Effenberger is deficient in not specifically teaching use of the elected specie of DBU-B as the onium compound, adding the mixture of mutually soluble curatives as solid solution or a melt and the use of an extruder for drying the coagulate while kneading.

11. **Claims 1-2, 4, 6, 10-11 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tang, optionally in view of Effenberger.** Tang discloses a process for preparing fluoroelastomer compositions of continuously feed a wet fluoroelastomer crumb to a mixing zone, continuously feeding at least one finely-divided solid useful as a component of the compositions, and continuously drying the mixed particulate material (col. 1, lines 40-45). An especially preferred polymer is a VF2/HFP copolymer

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(col. 2, lines 10-12). An especially preferred embodiment is where the finely divided solid is a pre-formed mixture of cross-linking agent and vulcanization accelerator for the elastomer, e.g., a hydroxylic aromatic compound and a quaternary phosphonium compound (col. 2, lines 55-64). Bisphenol AF is exemplified as a cross-linking agent making its use readily envisaged (Example 1). Tang is deficient in not teaching that the continuous drying step is performed while kneading. However, it would have been obvious to one of ordinary skill in the art to knead the mixture while drying in order to maintain homogeneity of the mixture while drying and in order to speed drying by continuously exposing new surfaces. Kneading while drying and maintaining a homogenous mixture is for instance taught by Effenberger discussed above. Extrusion of the composition using a screw material is exemplified in Example 1. Thus, kneading of the components in a molten state is disclosed. As above, in regards to the limitation that the vulcanizing agent and accelerator are mutually soluble, if such components are mutually soluble in the instant invention this is an inherent property which would also be true of the same components when used in the prior art.

12. Tang is also deficient in not specifically teaching use of the elected specie of DBU-B as the onium compound, adding the mixture of mutually soluble curatives as solid solution or a melt and the use of an extruder for drying the coagulate while kneading.

2. **Claims 1-6, 11 and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Covington, Jr.**

3. Covington, Jr. discloses a method for isolating an elastomer from a mixture of the elastomer and water which includes drying the polymer in a conventional twin screw extruder and dispersion of curing materials (col. 2, lines 5-10). The polymers are VF2/HFP fluoroelastomers (col. 4, lines 15-24). This is exemplified in Example 1, wherein a melted mixture of bisphenol AF and an onium compound were melt mixed with the dried polymer at a temperature above the melting point of the polymer.

13. **Claims 1-2, 4, 6, 10-12 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP'877 in view of Effenberger or Covington, Jr.**

14. EP'877 discloses compositions of a VF2/HFP copolymer to which is added a combination of a polyhydroxy compound curative and a quaternary phosphonium or ammonium compound as an

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accelerator (page 3, lines 22-25, and page 3, lines 10-18). Typical examples include bisphenol AF and DBU-B (page 4, lines 19-27), and are exemplified in the examples. The curatives are added to the isolated elastic copolymers and kneaded on rubber rolls and rekneaded to enhance dispersion and then subjected to sheeting. (page 8, lines 3-9). EP'877 indicates that the copolymer is isolated by known methods although specific known methods are not delineated. However, isolation and coagulation followed by drying with kneading are known methods of isolating the copolymers as for instance is discussed by Effenberger or Covington, Jr. above, and thus would have been obvious to use.

15. **Claims 1-6, 10-12 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over (i) Effenberger, or (ii) Tang, optionally in view of Effenberger, as applied to Claims 1-2, 4, 6, 10-11 and 14 above, and further in view of EP'877, EP'276, and Covington, Jr.**

16. The teachings of Effenberger and Tang discussed above are deficient in not specifically teaching use of the elected specie of DBU-B as the vulcanization accelerator. However, Effenberger broadly teaches the use of quaternary onium compounds known in the art, and Tang teaches the use of bisphenol AF and vulcanization accelerators. Thus, it would have been obvious to one of ordinary skill in the art to use DBU-B as the vulcanization accelerator, as it is well known as an accelerator in the curing of fluoroelastomers in conjunction with bisphenol AF, as for instance is taught by EP'877, discussed above.

17. The teachings of Effenberger and Tang are also deficient in not teaching the use of a solid solution or a melt if the vulcanizing agent and accelerator. However, it is known to use a compatibilized mixture of polyhydroxy compound and onium compound, obtained by melting the mixture, in order to improve dispensability and processability in VF2/HFP copolymers as is taught by EP'276 (pages 1, line 39 to page 6, line 22) and Covington, Jr.

18. The teachings of Effenberger and Tang are further deficient in not teaching drying the coagulate while kneading in an extruder. However, the various well known methods of drying VF2/HFP coagulates include drying in an extruder as for instance is taught by Covington, Jr. (col. 3, lines 4-11, col. 4, lines 15-24). It would have been obvious to one of ordinary skill in the art to dry the coagulates taught by

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Effenberger or Tang in an extruder while kneading as for instance is taught by Covington, Jr., with an expectation of equivalence to other known methods of drying.

4. **Claims 1-6, 11-12 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Covington, Jr. as applied to Claims 1-6, 11 and 14 above, and further in view of EP'877 or Oka.**

5. Covington, Jr. is deficient in not teaching the elected specie of onium compound (vulcanization accelerator). However, the reference broadly teaches the addition of curing agents, and the benzyltriphenylphosphonium chloride is but an example. It would have been obvious to one of ordinary skill in the art to use melt mixtures of other onium compounds known to be useful as an accelerator with bisphenol AF. DBU-B is well known as an onium compound useful as a cure accelerator as for instance is taught by EP'877 (discussed above) or Oka (col. 7, line 66 to col. 8, line 33), and it would have been obvious to use such with an expectation of equivalent results to the onium compound used by Covington, Jr.

Art of Interest/Technological Background

19. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

20. Chen is concerned with compositions and methods of making them which read on the instant claims. The filing date is later than the date of the foreign priority date of the instant application. However, lacking a certified translation of the instant application, it may be used in a future rejection of the instant claims.

21. Trautvetter discloses compositions such as used in the instant process claims as well as drying while tumbling. However, the curatives are used as a coagulant, as opposed to being added to the coagulated coagulated copolymer.

Future Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to D.R. Wilson whose telephone number is 703-308-2398 (571-272-1113).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu can be reached on 703-308-2450 (571-272-1114). The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications. The unofficial direct fax phone number to the Examiner's desk is 703-872-9029 (571-273-1113).

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 308-2351.

The Examiner is expected to move to the new Office about Christmas time. New telephone numbers known to the Examiner are indicated in parentheses.

A handwritten signature in black ink, appearing to read 'D. R. Wilson', with a long horizontal flourish extending to the right.

D. R. Wilson
Primary Examiner
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